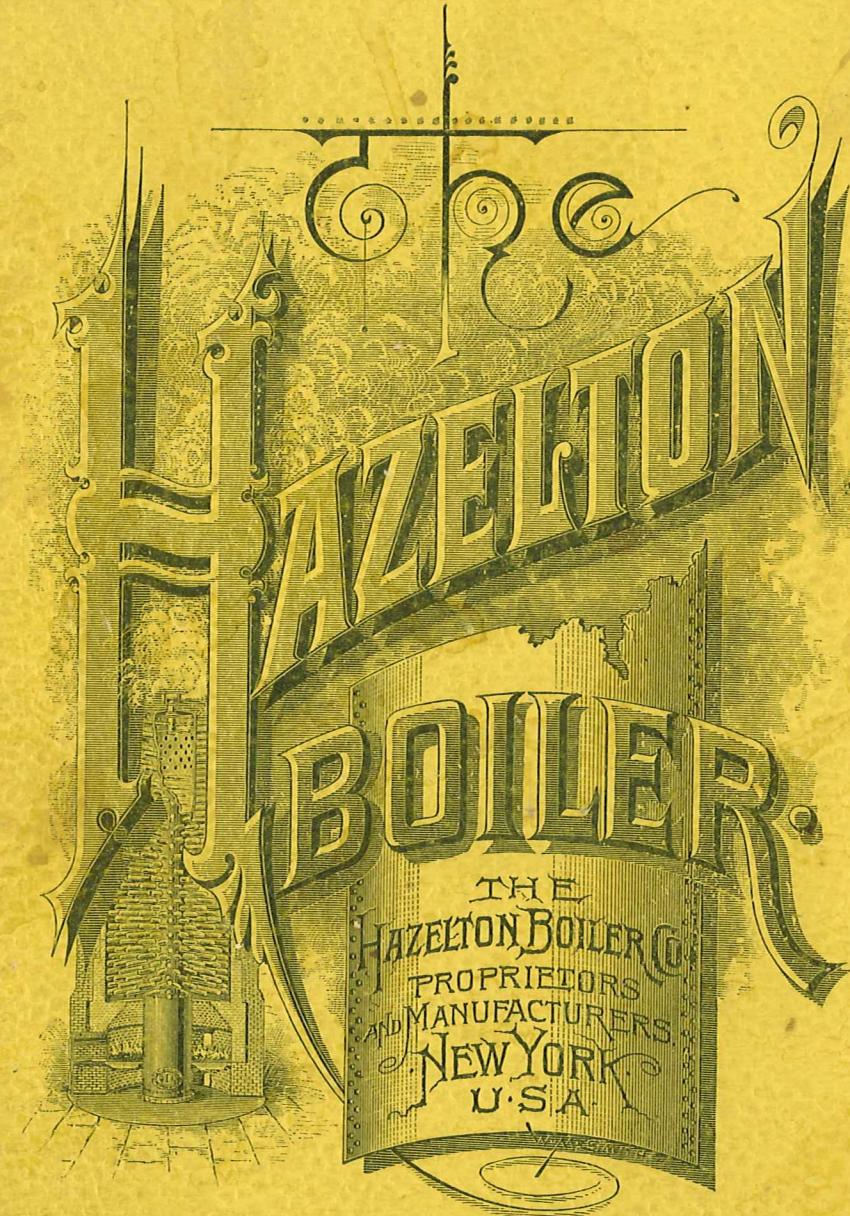


JAMES B. REEVES.



# THE HAZELTON BOILER CO.,

PROPRIETORS AND MANUFACTURERS OF PATENT

Stationary, Portable and Marine Boilers,

NEW YORK, U. S. A.

SOLE PROPRIETORS

OF THAT TYPE OF WATER-TUBE BOILER FREQUENTLY CALLED

THE PORCUPINE BOILER.

PATENTED IN THE UNITED STATES AND FOREIGN COUNTRIES.

GENERAL OFFICE:—No. 716 EAST THIRTEENTH STREET, NEW YORK.

BRANCH OFFICE:—ROOM 28—No. 145 BROADWAY, NEW YORK.

WORKS:—Nos. 716 to 732 EAST THIRTEENTH STREET, NEW YORK

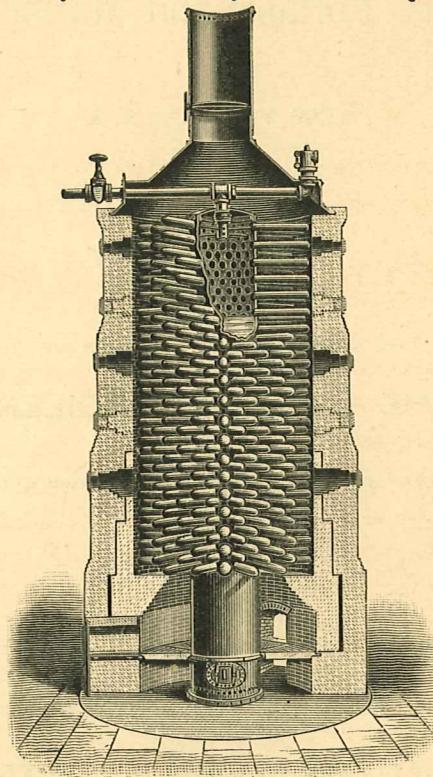
ADDRESS ALL COMMUNICATIONS TO THE COMPANY.



RANKIN, BRAYTON & CO.,  
PROPRIETORS OF  
PACIFIC IRON WORKS,  
No. 127 FIRST ST., SAN FRANCISCO, CAL.  
SOLE MANUFACTURERS FOR THE  
PACIFIC COAST, BRITISH COLUMBIA  
AND  
WEST COAST OF MEXICO.

BARTLETT, HAYWARD & CO.,  
GENERAL AGENTS,  
OFFICE,  
COR. GERMAN AND CALVERT STREETS,  
BALTIMORE, MD.

## THE HAZELTON BOILER CO.



GEORGE M. NEWHALL & BRO.,  
GENERAL AGENTS,  
OFFICE AT  
SOUTHWARK FOUNDRY,  
FIFTH AND WASHINGTON AVENUE,  
PHILADELPHIA, PA.

J. J. DE KINDER,  
SOLE AGENT FOR PHILADELPHIA,  
OFFICE,  
No. 51 NORTH SEVENTH STREET,  
PHILADELPHIA, PA.

## THE HAZELTON BOILER CO.,

No. 716 EAST 13TH STREET,  
NEW YORK CITY,

U. S. A.

WE BEG TO PRESENT TO THOSE INTERESTED IN THE PRODUCTION OF STEAM, THIS ENLARGED CIRCULAR OF

## THE HAZELTON STATIONARY BOILER,

WITH NEW WOOD ENGRAVINGS, AND FULL DESCRIPTIVE MATTER, EMBODYING IN AS BRIEF FORM AS IS CONSISTENT WITH AN INTELLIGENT EXPLANATION, ALL THE MERITS OF THIS WONDERFUL STEAM PRODUCER. WE OPERATED OUR EXPERIMENTAL BOILER OF TWO HUNDRED AND SEVENTY-FIVE HORSE-POWER FOR NEARLY FOUR YEARS PRIOR TO ESTABLISHING OUR WORKS, AND NOW, AFTER A PRACTICAL EXPERIENCE COVERING OVER SEVEN YEARS, WE ARE PREPARED TO DEFEND ITS MERITS AGAINST ALL ADVERSE CRITICISM. MANY ABLE MEN IN MATTERS PERTAINING TO STEAM, HAVE EXAMINED IT, AND GIVEN IT THEIR UNQUALIFIED ENDORSEMENT. OUR BUSINESS IS DAILY INCREASING, AND WE HAVE RECENTLY EXTENDED OUR MANUFACTURING PLANT.

WE WOULD BE PLEASED TO HAVE ALL THOSE INTERESTED VISIT OUR WORKS, AND EXAMINE THE BOILER,

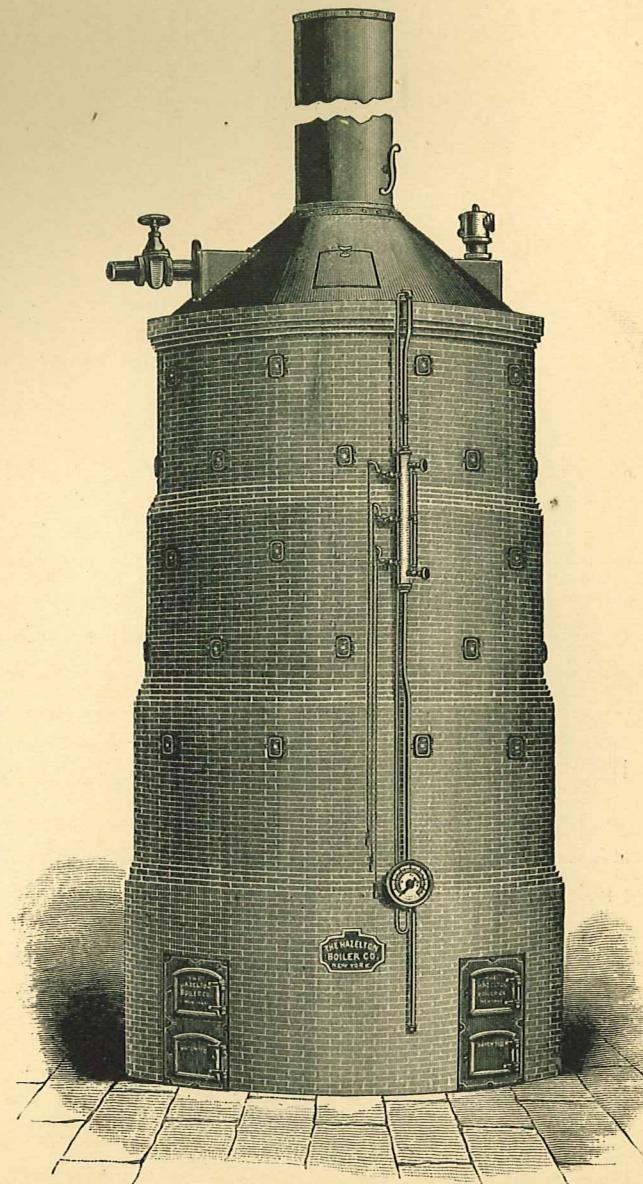
VERY RESPECTFULLY YOURS,

THE HAZELTON BOILER CO.

NEW YORK CITY, NOVEMBER, 1887.

THE HAZELTON BOILER CO.

NEW YORK, U. S. A.

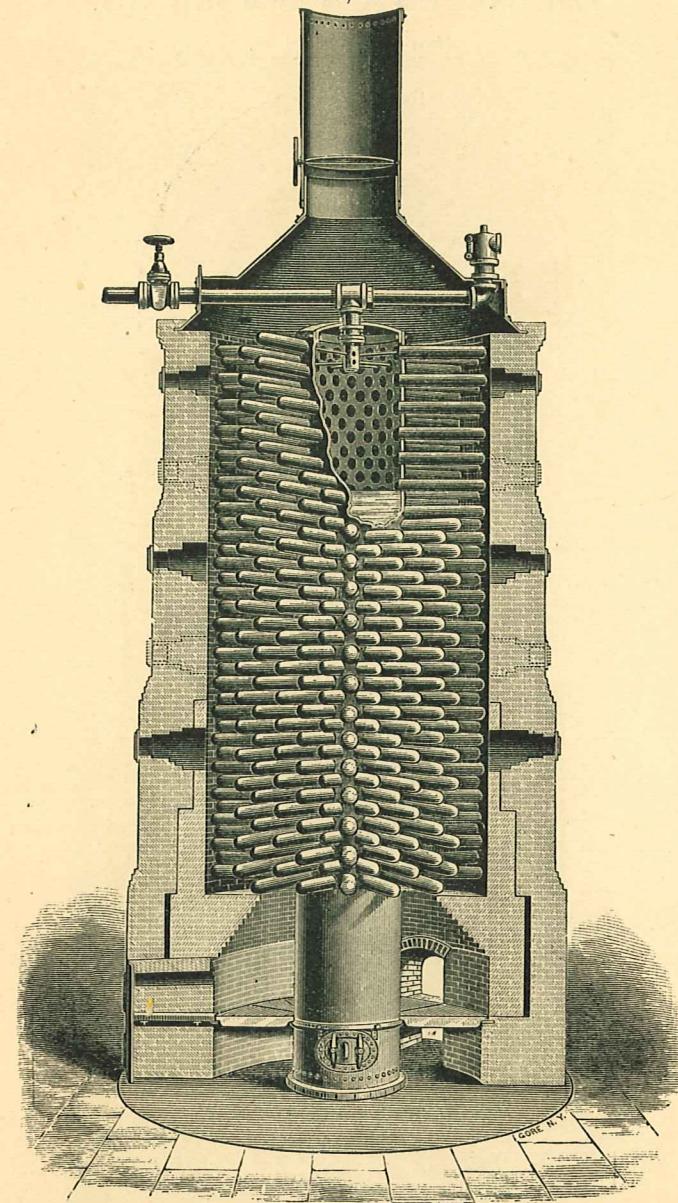


Elevation of Standard 215 Horse-Power Stationary Boiler complete.

**STATIONARY BOILERS.**

THE HAZELTON BOILER CO.

NEW YORK, U. S. A.

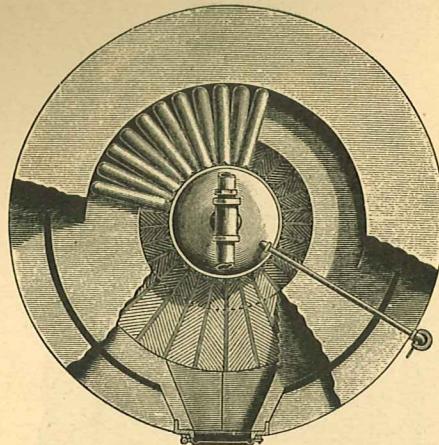


Standard 215 Horse-Power Stationary Boiler, with one-half of Brickwork, Smoke-Hood, and Smoke-Stack removed.

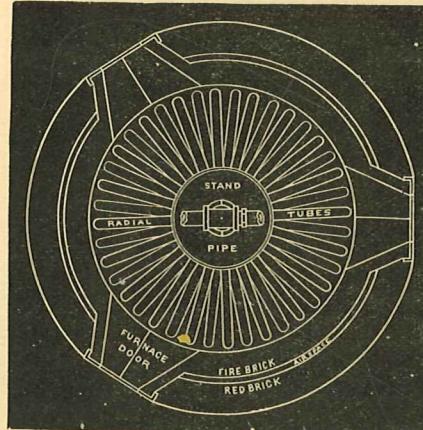
**STATIONARY BOILERS.**

# THE HAZELTON BOILER CO.

NEW YORK, U. S. A.



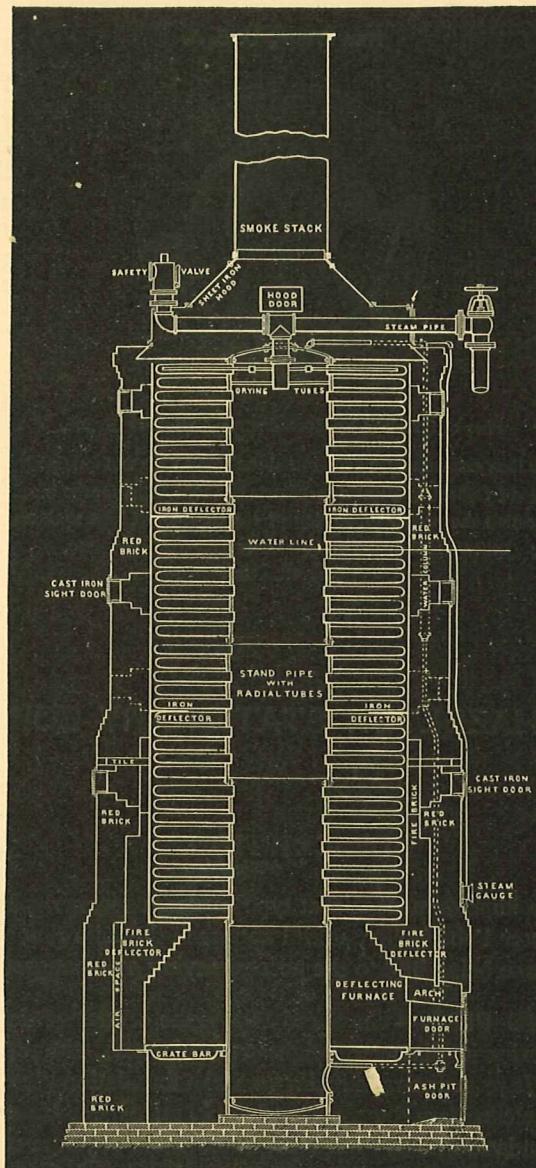
Plan of  
Standard 215 Horse-Power Stationary Boiler,  
Showing Brickwork at level of top of Deflecting Furnace  
Stand Pipe with part of two rows of Radial  
Tubes, Furnace Door, Sill Plate,  
Grate Bars, etc., etc.



Plan of  
215 Horse-Power Stationary Boiler,  
with Smoke Hood and Smoke Stack removed, showing Stand  
Pipe complete, with Radial Tubes, and Section of  
Brickwork just above Grate Bars.

# THE HAZELTON BOILER CO.

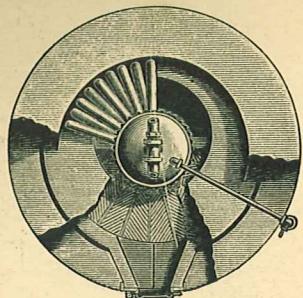
NEW YORK, U. S. A.



Sectional Elevation of Standard 215 Horse-Power Stationary Boiler.  
**STATIONARY BOILERS.**

## THE HAZELTON BOILER CO.

NEW YORK, U. S. A.



Plan of Standard 25 Horse-Power Stationary Boiler,

Showing Grate Bars extending one half around the Stand Pipe and terminating at Bridge Walls, top of Deflecting Furnace eccentric to Stand Pipe, for the purpose of directing the proper proportion of the currents of heat to those tubes which do not come directly over the Grate Bars,  
etc., etc., etc.

## THE HAZELTON STATIONARY BOILER.

### DESCRIPTION.

THIS is an improvement in that type of steam generator, known as the Water Tube Boiler, as will appear in the following description, reference being had to the accompanying wood engravings.

**STAND PIPE.**—The Stand Pipe is the central vertical cylinder, and varies in diameter, height and thickness, with the power required. It rests upon a circular cast iron foundation plate, placed upon a supplementary foundation of brick, raised one course above level of foundation, so as to prevent water in ash pit, from coming in contact with the boiler. It is not fastened to foundation, and can

expand and contract freely. The lower section is made of the best Solid Fire Box Iron, and the remaining sections, into which the radial horizontal tubes are expanded, of the best C. H. No. 1 Flange Iron, while the heads of this boiler are of Extra Flange Iron, and properly dished and flanged. Every plate of iron used, is stamped with the name of the maker, and 50,000 lbs. tensile strength, and great care is exercised in the manufacture of this boiler, the best of rivets are used, and well driven, the edges of the plates planed, all seams thoroughly caulked, tube holes drilled to gauge, and every attention given to secure thorough workmanship.

That portion of the stand pipe below the grate bars, forms the mud drum, into which a man-hole with plate is placed affording ready facility for entering the boiler and examining every portion of its interior surface. Owing to the very rapid circulation of water in this boiler the extraneous matter contained in the water is deposited in the lower end of the stand pipe and either blown off or removed through the manhole.

**RADIAL TUBES.**—The diameter, length and number depend upon the size of the boiler. They are of full standard gauge. One end of each tube is open, the other is closed upon itself, forming a hemispherical or round end, and in the process of closing, the end is thickened, thereby adding strength and producing a homogeneous tube. The open end of each tube is expanded into the stand pipe, the tube extending outward horizontally, its closed end being about one inch distant from the inner surface of the brickwork enclosure of the boiler. Thus the radial tubes being secured at one end only, and clear of the brickwork at the other end, can expand and contract without strain.

**STEAM PIPE AND STEAM DRYING TUBES.**—A wrought iron flange is riveted to the under side of the top head of stand pipe, and abundant thread-hold secured by cutting a thread through both head and flange. A nipple is screwed in from the outside, the lower end with a long thread extending below the head two or three inches. At upper end of this nipple, a malleable iron tee is connected, and from one outlet of this tee the steam pipe extends horizontally to outer line of brickwork to receive Steam Valve, and in like manner another pipe in the opposite direction, connects with the Pop Safety Valve.

At the lower end of the nipple, and inside of the stand pipe, connected to it by a pair of flanges bolted together, is a vertical pipe, open at upper end and closed at lower end. Into this vertical pipe are screwed a series of horizontal wrought iron pipes, of small diameter, and open at both ends, which extend outward and into the uppermost steam drying tubes in stand pipe, almost to their outer ends, and the steam as it becomes disengaged from the surface of the water, must enter the steam drying tubes, pass to their outer ends, before entering these small pipes, which convey the dry steam into the steam pipe.

For convenience of removal, these small wrought iron pipes are in two pieces, connected by a coupling.

**SMOKE HOOD.**—This is made of best materials, and in form as shown in wood engravings. A door is placed in each, for ready access to exterior of upper part of stand pipe. A dormer is built on each side of hood. The pop safety valve rests freely on the roof of one, and the steam pipe passes out through a movable slide in the front of the other, which permits the stand pipe to expand and contract without straining the joints of steam, or safety valve pipes.

**SMOKE STACK.**—The diameter varies with the area of grate surface. The Brickwork enclosure, from level of grate bars upwards, forms the largest portion of necessary stack, and a single iron stack having a damper, and of sufficient length to extend about two feet above the ridge of roof, over boiler room, or an adjoining loftier building, to meet the requirements of natural draft, would be all the boiler demands.

**STEAM AND WATER GAUGE COLUMN.**—The Water Columns are of different lengths, to suit the various sizes of boilers. They are made of extra heavy, lap welded, wrought iron pipe, into which three spring gauge cocks are tapped, and a water gauge is attached, having automatic self-closing valves to meet the contingency of a broken gauge glass. In the longest water columns, wherein excessive length of glass would be undesirable, it is in two equal pieces, joined at centre by a bracket attached to column. The steam pipe of column is connected to top head of stand pipe, and the water pipe connected to stand pipe beneath, and as close to grate bars as is possible, so as not to interfere with

the easy removal of ashes from ash pit. A three-way valve is placed on water pipe of column to blow it down when necessary, and also to free horizontal water pipe connecting it to stand pipe, and the water discharged into ash pit.

The steam and water pipes, respectively, have a brass union, for the ready connection of water column to boiler.

The Steam Gauge is connected to a branch outlet in steam pipe of water column.

**FEED PIPE.**—This is screwed into the stand pipe beneath grate bars, and extends outward through brickwork enclosure of boiler a sufficient distance to receive a globe valve, to which is connected a check valve.

**BLOW OFF PIPE.**—This pipe is also connected to stand pipe, same as feed pipe, but having an extension pipe within stand pipe, which reaches nearly to bottom head. The other end receives a blow-off cock, outside of brickwork.

**DOOR FRONTS.**—The door fronts are of heavy cast iron, complete with furnace and ash pit doors. The furnace doors have liner and sill plates. Each boiler has one or more door fronts, according to the size and location of the boiler. The Sill Plates, or, as they are often called, dead plates, are made in right and left halves. The edges of the plates are embedded in the brickwork on each side about two inches, the weight in the centre being supported by two T iron bars, which extend across the opening under the sill plates, and are built into the brickwork on each side. The sill plates have a lip projecting horizontally from the under side, which supports one end of the grate bars at this part of the circle.

**GRATE BARS.**—The grate surface is circular in form, and in the larger boilers extends entirely around the stand pipe. The smaller boilers require less, and the grate surface extends only a portion of the distance. The grate bars at their inner ends rest upon a wrought iron ring, supported by wrought iron brackets riveted to stand pipe, and the outer ends are supported by cast iron plates resting upon a projection of brickwork.

**SIGHT DOORS.**—The sight doors are of cast iron, hinged to a cast iron frame. They are placed at frequent intervals in

brickwork enclosure of boiler, and serve for the inspection of the exterior of stand pipe and radial tubes, as well as for the introduction of a steam hose, having a rose-head nozzle, for the purpose of blowing off any dust deposits from the fire.

**DEFLECTING PLATES.**—The deflecting plates are of wrought iron, and vary in width, with the length of the radial tubes. They are placed horizontally around the inside circle of brickwork, close to same, and serve to direct the currents of heat toward the stand pipe, where the radial tubes present less free draft space than at their outer ends.

**BRICKWORK.**—The brickwork enclosure of this boiler should be built of a good quality of common red brick, and laid "Flemish Bond." That portion of brickwork, from top of foundation to level of grate surface, to be laid in mortar, composed of one part fresh hydraulic cement, and two parts clean, sharp sand, to be mixed only as used, and all above that level, in mortar composed of three parts good lime mortar, mixed as used with one part cement mortar, of same quality as hereinbefore described.

The furnace of boiler is lined with fire brick laid in fire mortar, the first two courses above grate bars, placed close to red brick, and above that point to top of furnace, an air space is provided, with an occasional header to tie the red brick and fire brick walls together.

**DEFLECTING FURNACE.**—This furnace is formed by corbeling the fire brick inward toward stand pipe, as shown in wood engravings.

## THE HAZELTON STATIONARY BOILER.

### ITS COMMENDABLE FEATURES.

The materials used in its construction are of the best quality, and the workmanship unsurpassed. The wrought iron pipe, fittings, valves, etc., are extra heavy to withstand the pressures of one hundred pounds per square inch, and upwards at which this boiler

may be worked with perfect safety. It can be used at low, or very high pressure. It requires limited floor space, and its weight renders it economical in transportation.

It is simple in construction, and easily repaired if necessary, and with an expander, extra radial tubes, and gauge glasses, complete independence of all outside assistance is the result.

It is absolutely safe on account of the small diameter of its parts; rapidly produces an abundance of perfectly dry steam, and is very economical in fuel, consuming any refuse combustible material with excellent results, on account of the large combustion chamber formed by the brickwork enclosure. Perfect circulation. Great variations of water line will not endanger its safety.

There is very slight radiation of heat from the brickwork enclosure, which is simple in construction, and requires no more brick than for other types of boilers. All the heating surface is effective. No priming. It is made entirely of wrought iron, except the manhole plate, grate bars, and door fronts, and is placed in brickwork enclosure in such a manner that it can freely expand and contract in every part without strain; therefore there can be no leakage due to unequal expansion and contraction. It can be entered through manhole in lower end of stand pipe, and every square inch of its interior examined, and all dust deposits from the fire, removed from its exterior, by introducing a steam hose, having a rose-head nozzle, through eight doors in brickwork enclosure.

No brick chimneys required, as the brickwork of boiler from level of grate bars upwards, forms the largest portion of necessary stack and a single iron stack of sufficient length to extend about two feet above highest point in roof over boiler room, or an adjoining loftier building, to meet the requirements of natural draft, is all this boiler demands.

The radial tubes being at a right angle to the currents of heat, and placed in stand pipe in such a manner as to cause these currents to take a tortuous lateral course in their exit from combustion chamber, the heat is very thoroughly utilized and the temperature of the escaping gases reduced to the minimum.

Owing to the peculiar construction of the deflecting furnace, the gases are ignited and consumed, and the calorific value of the fuel very thoroughly utilized, and this furnace serves to direct the currents of heat toward the stand pipe, where the radial tubes are

nearer to each other than at their outer ends, and the deflecting plates above assist in maintaining this direct upward draft, thereby bringing the heat in contact with the large volume of water in the stand pipe and greatly accelerating the circulation in the radial tubes.

It is very durable. Our first or experimental boiler, which was started on August 8th, 1880, although worked day and night, is still in active service, and has not as yet required repair.

We refer to the testimonials to be found upon the succeeding pages of this circular.

## THE HAZELTON BOILER CO.

BUILD THE FOLLOWING

### STANDARD SIZES OF STATIONARY BOILERS.

#### 25 Horse Power.

30	"	"
35	"	"
40	"	"
45	"	"
50	"	"
60	"	"
75	"	"

#### 100 Horse Power.

125	"	"
150	"	"
175	"	"
215	"	"
250	"	"
300	"	"
350	"	"

This includes all the Wrought and Cast Iron work, Trimmings, etc., as follows:—

Stand Pipe complete. All necessary Radial Tubes. Smoke Hood. ~~Twelve lineal feet of Smoke Stack, with Damper.~~ Circular Cast Iron Foundation Plate for Stand Pipe. One set of Grate Bars, with Bearer Bars. One or more Cast Iron Door Fronts depending upon size and location of boiler, with Furnace Doors, Door Liners, Door Sills, and Ash Pit Doors, complete. All necessary Cast Iron Sight Doors. Deflecting Plates. Steam and Water Gauge Column, with pipe and fittings to connect it to stand pipe. Steam Pipe with Steam and Pop Safety Valves, as shown on wood engravings. Feed Pipe, with Globe and Check Valves. Blow Off Pipe with Cock. All suitably packed for shipment.

We furnish the services of a competent man to superintend the erection of the work, expand the radial tubes, and apply a water pressure test, fifty per cent. in excess of the steam pressure to be carried on boiler. If the place of erection exceeds one hundred miles distant from this city, purchaser to defray time and expenses of our man until his return to our works.

Purchaser to furnish at his expense the following: all necessary assisting labor required by our man, and lumber for scaffolding; also foundation, and brickwork (the latter as per our blue-print and instructions), and defray the freight.

Our regular boiler setters will furnish price for the erection of brickwork of any plant of boilers, if desired.

In ordering boilers, please state kind of fuel to be used, and steam pressure desired to carry.

The horse power of this boiler is based upon the evaporation of 30 lbs. of water, per horse power, per hour, from 212° Fahrenheit, with ordinary firing.

We are prepared to furnish plants of boilers of any desired capacity, solicit inspection of those now in operation, and will forward proposals and any further information on application.

THE HAZELTON BOILER CO.

# THE HAZELTON BOILER COMPANY.

## DETAILS OF STANDARD SIZES OF STATIONARY BOILERS.

Horse Power.	Square Feet.	Heating Surface.	Grate Surface.	TUBES.				STAND PIPE.				BRICKWORK.				Amount of Water contained in Water Line.	Size of Safety Valve.	Size of Water Line.	Shipping Weight.					
				Outer Diameter.	Inner Diameter.	Thickness of tube shells.	Length.	Outer Diameter.	Inner Diameter.	Height.	Outer Diameter at Base.	Inner Diameter.	Height.	Outer Diameter of smoke stack.	Inner Diameter.	Height.	Number of Red Brick.	Number of Fire Brick.						
25	260	7.50	0.213	3	17	1/2	24	8	7	10	9	2	1	2	7	6	8	11	2,600	500	2	1,937	3,950	
30	306	9.75	0.249	5	20	1/2	24	9	1	11	4	2	1	2	7	5	10	5	3,000	500	2	2,000	4,400	
35	368	11.00	0.284	3	18	1/2	24	10	2	12	5	2 1/2	1	3	7	5	10	5	4,500	400	2 1/2	2,250	5,700	
40	405	11.00	0.302	4	24	1/2	24	10	7	12	6	2 1/2	1	3	7	9	11	6	5,000	400	2 1/2	2,400	6,020	
45	457	13.40	0.338	3	19	1/2	24	11	11	13	7	3	1	4	7	9	11	6	5,500	400	2 1/2	2,600	6,200	
50	501	13.40	0.355	3	20	1/2	24	11	8	14	0	3	1	5	7	9	11	11	6,000	400	2 1/2	2,809	6,500	
60	602	17.25	0.408	3	21	1/2	24	12	9	15	3	3	1	8	8	5	13	2	6,500	600	3	3,087	7,500	
75	752	18.62	0.495	3	22	1/2	24	14	3	16	8	3 1/2	1	9	8	6	14	7	7,500	800	3	3,770	8,090	
100	1,003	25.00	0.440	4	24	2	27	19	6	22	2	4	2	0	9	5	19	9	10,000	1,300	3 1/2	6,312	12,400	
125	1,258	32.00	0.534	4	25	2	31	20	2	23	0	4	2	2	3	10	1	20	4	12,500	2,000	4	8,300	15,400
150	1,501	38.00	0.586	4	27	2	33 <sup>1</sup> / <sub>2</sub>	21	11	24	9	5	2	6	10	9	22	1	15,000	2,600	5	11,063	18,414	
175	1,779	44.50	0.651	4	29	2	36	22	6	25	8	5	2	8	12	0	22	10	17,000	3,500	5	12,625	22,250	
215	2,156	52.00	0.746	4	31	2	36	24	10	28	0	6	2	3	0	12	6	25	2	20,000	4,000	5	14,087	25,000
250	2,513	62.00	0.803	4	33 <sup>1</sup> / <sub>2</sub>	2	38	27	6	30	9	6	3	2	13	4	27	10	24,000	5,000	5 1/2	17,750	28,800	
300	3,000	75.50	0.893	4	36	2	40	29	2	32	6	7	3	6	14	3	29	2	27,000	6,500	6	20,300	34,500	
350	3,529	85.00	1,052	4	33 <sup>1</sup> / <sub>2</sub>	2	43	36	0	35	0	8	3	8	14	10	32	0	33,000	7,500	6	24,500	39,300	

# THE HAZELTON BOILER CO.

NO. 716 EAST 13TH STREET,  
NEW YORK CITY.

*Evaporation Test of 75 H. P. Hazelton Boiler at Works  
of The New Howe Manufacturing Co.,*

BRIDGEPORT, CONN.

Duration of test, - - - - - 11 hours.

Total amount of water evaporated, - - - - - 13,470 lbs.

Buckwheat coal burned, - - - - - 1,400 lbs.

Coal burned per square foot of grate per hour, - - - - - 7.33 lbs.

Percentage of ash, - - - - - 15 per cent.

Temperature of feed water, - - - - - 200 deg.

Water evaporated at 65 lbs. pressure, per lb. of buckwheat coal, actual conditions, - - - - - 9.62 lbs.

Water evaporated per lb. of buckwheat coal from and at 212 degrees, - - - - - 10.04 lbs.

Water evaporated at 65 lbs. pressure, per lb. of combustible, actual conditions, - - - - - 11.31 lbs.

Water evaporated per lb. of combustible, from and at 212 degrees, - - - - - 11.81 lbs.

Heating efficiency of the steam, as compared with dry or saturated steam (7 tests), - - - - - .986

AUGUST 16TH, 1887.

# STATIONARY BOILERS

SOLD BY

THE HAZELTON BOILER CO.

1	Boiler of 30	H. P.	The New York Mutual Gas Light Co., New York.
2	Boilers of 60	" each	" " " " "
4	" 275	" "	" " " " "
1	Boiler of 120	"	The Hygeia Sparkling Distilled Water Co., "
1	" 100	"	Lambertville Rubber Co., Lambertville, N. J.
2	Boilers of 150	"	" " " " "
4	" 40	"	Messrs. Henry Disston & Sons, Tacony, Pa.
1	Boiler of 65	"	" " " " "
1	" 50	"	National Tube Works Co., McKeesport, "
1	" 100	"	" " " " "
2	Boilers of 215	"	" " " " "
3	" 250	"	" " " " "
2	" 120	"	The Jersey City Steel Co., Jersey City, N. J.
2	" 75	"	The Hudson County Gas Light Co., Hoboken, N. J.
2	" 50	"	St. Cloud Hotel, New York.
2	" 215	"	Consolidated Gas Co., Baltimore, Md.
2	" 175	"	The Municipal Gas Light Co., Albany, N. Y.
1	Boiler of 215	"	The St. Paul Gas Light Co., St. Paul, Minn.
2	Boilers of 215	"	Castile Salt Co., Castile, Wyoming Co., N. Y.
2	" 40	"	Citizens' Gas Light Co., Rye, Westchester Co., N. Y.
4	" 215	"	North Branch Steel Co., Danville, Pa.
2	" 75	"	The Meridian Water Works Co., Meridian, Miss.
2	" 250	"	The Phoenix Iron Co., Phoenixville, Pa.
1	Boiler of 75	"	" " " " "
1	" 40	"	Messrs. Alden Sampson & Sons, New York.
1	" 200	"	" " " " "
1	" 350	"	" " " " "
1	" 100	"	The Bull River Phosphate Co., Ltd., Sheldon, S.C.
1	" 150	"	The Bergner & Engel Brewing Co., Philadelphia, Pa.
1	" 100	"	The Spaeth, Krautter & Hess Brewing Co. "
1	" 100	"	Weymouth Paper Mills, Elwood, N. J.
1	" 150	"	Hadley Co., Holyoke, Mass.
1	" 75	"	The New Howe Mfg. Co., Bridgeport, Conn.
1	" 215	"	The Mexican Artificial Stone Co., City of Mexico.
1	" 65	"	Howard Patent Metallic Brush Co., Reading, Mass.
1	" 100	"	Mr. William Moller, Planing Mill, N. Y.
1	" 50	"	The Cohoes Patent Lumber Co., Cohoes, N. Y.
1	" 50	"	The Jackson & Woodin Mfg. Co., Berwick, Pa.

And many others.

# THE HAZELTON BOILER CO.

## TESTIMONIALS.

From THE LA LUZ MILLING COMPANY.

ST. LOUIS, January 15th, 1887.

PACIFIC IRON WORKS, San Francisco, Cal.

GENTLEMEN:—At your request I herewith give you a statement of my experience with a 70 Horse Power Hazleton Boiler, purchased a year ago for use in my Mill in Mexico. Although I had never seen one, found no difficulty with directions given, in setting it up without the aid of a Boiler maker or other skilled mechanic.

Neither have I had any difficulty whatever in running it with the worst water I ever saw put into a Boiler: so bad that it ruined a good Tubular Boiler in about three months. Though getting a large sedimentary deposit in the bottom of the column, which was easily got rid of through the blow off pipe, the tubes were always clean and entirely free from scale. Every part is accessible for cleaning out or repair, when necessary, which cannot be said of any other style of Boiler. The setting was made of adobes, which answered the purpose just as well as brick.

In the matter of economy nothing can equal it. Before putting in the Hazelton, we used four cords of wood in twenty-four hours in an ordinary 25 Horse Power Tubular Boiler, while the 70 H. P. Hazelton required only two cords, one-half the amount, developing more than twice the power. After a year's use, I see nothing to indicate that it will not be the most durable, as I believe it is the safest and most economical Boiler now made.

I have had nearly twenty years' experience with all kinds of Boilers, and give the Hazelton preference against all competitors. In fact, I told my Company that we could not afford to run the ordinary tubular or any other kind of a Boiler, if they were put up in our Mill free of cost.

You have my order for three more of 75 H. P. each for the Mill of the La Luz Company, which I represent, now being erected at Guanajuato, Mexico.

Yours truly, H. C. HARRISON, Superintendent.

From CONSOLIDATED GAS COMPANY.

BALTIMORE, MD., October 5th, 1887.

THE HAZELTON BOILER CO., New York.

GENTLEMEN:—Replying to your inquiries, as to the working of the two 215 H. P. Hazelton Boilers, which you furnished us something over a year since, I have to say that they are doing their work admirably. One of them has furnished all the steam used in the works, for making 1,300,000 ft. of carburetted water gas per day. We carry a very uniform pressure and have dry steam. We have run them 3 months without cleaning, 24 hours per day, and when they were opened, there was but little scale, and that such as could be removed with the finger nail. When I want more boilers, I shall use the same kind.

Very truly yours,

F. H. HAMBLETON, Engineer.

From HOWARD PATENT METALLIC BRUSH CO.

BOSTON, December 30th, 1886.

THE HAZELTON BOILER Co., New York.

GENTLEMEN:—In answer to your inquiries as to the working of the Hazelton Boiler, which we bought of you and placed in our factory last February, and have run constantly ever since, we would simply say that it is all we could desire. The difference in the cost of fuel as between our old and your new boiler is very great, for instance: our old boiler was rated nominally twenty (20) H. P., and yours is sixty (60). We would say further that we do not consume any more fuel with the new boiler than we did with the old one we have discarded, and we would also add that we are taxing it to its fullest capacity, as we are using at the present time twice the power, and heating more than twice the surface, than we did before having yours put in.

Yours respectfully,

WILLIAM PROCTOR,  
*Agent.*

From MESSRS. ALDEN SAMPSON & SONS.

NEW YORK, January 7th, 1887.

THE HAZELTON BOILER Co.

DEAR SIRS:—The forty horse power boiler which we have had in use at Hallowell, Me., and the two Hazelton boilers of 200 and 350 horse power respectively which we have at our works at Newtown, L. I., have given good satisfaction. We consider them very economical in fuel, easily kept clean, rapid producers of an abundance of dry steam and perfectly safe.

Yours very truly,

ALDEN SAMPSON & SONS.

From THE HUDSON COUNTY GAS LIGHT CO.

HOBOKEN, N. J., February 6th, 1887.

THE HAZELTON BOILER Co.

GENTLEMEN:—We have now had in constant use in these works two of your boilers, of eighty (80) horse power each, for a period of two (2) years and are pleased to say that they are in as good shape and repair as the day they were completed. They are quick steamers, and economical in fuel, and, above all, produce very dry steam, that being, of course, very necessary in the production of water gas.

We work our boilers alternately for a period of six weeks, and at their full capacity, running never under one hundred pounds pressure. We examine the inside of the boilers only once in six weeks, and then thoroughly clean down the outside with steam hose, and it is done in less than a day. One man, in conjunction with many other duties, runs our boiler handily.

Yours most sincerely,

C. B. SEWARD,  
*Superintendent.*

From THE HYGEIA SPARKLING DISTILLED WATER CO.

NEW YORK, January 31st, 1887.

MESSRS. THE HAZELTON BOILER Co., New York.

GENTLEMEN:—Your letter inquiring about the Hazelton Boiler, came duly to hand. We have been so pressed for time that until now it has not been answered. About all that we have to say with regard to the Hazelton Boiler is that like the healthy functions of the human system, we are not aware of its existence. Our coal bills are much reduced and it costs us nothing for repairs. We have recently examined its interior and found all the tubes clean on the inside. Our experience now covers a period of nearly a year and has been favorable.

Respectfully,

F. T. KING,  
*President.*

From WEYMOUTH PAPER MILLS.

NEW YORK, February 8th, 1887.

THE HAZELTON BOILER Co.

GENTLEMEN:—The one hundred horse power boiler erected by you at our mill in Elwood, New Jersey, last spring, gives perfect satisfaction. It is very economical in fuel, and the steam is very dry. It tested one hundred and fifty horse power. We recommend it to any one in want of boilers and would be pleased to have any one see it. We consider it the best boiler made.

Very truly yours,

ROBERT FULTON.

From THE COHOES PATENT LUMBER CO.

COHOES, N. Y., July 13th, 1885.

THE HAZELTON BOILER Co., New York.

GENTLEMEN:—I have the pleasure of informing you that the 40 horse power Hazelton Boiler erected by you for the Patent Straw Lumber Co., has in every appointment justified your representations.

In point of economy in fuel, rapid steaming, safety, and ease with which it carries the 150 pounds pressure, which we require, without apparent strain, surpasses any boiler with which I have had experience.

I have come to regard it, after seven months' use, as being one of the safest, most economical, and best constructed Boilers; especially so for heating purposes, abrogating the necessity and expense of a superheater where a high degree of heat is required.

I am, gentlemen, respectfully yours,

J. N. BUNNELL,  
*General Manager.*

From THE NEW YORK MUTUAL GAS LIGHT CO.

NEW YORK, February 23d, 1887.

THE HAZELTON BOILER Co.

DEAR SIRS:—As you know, the first Hazelton Boiler ever erected, is in these works; it is of 275 horse power, and has been at work day and night since it was completed on August 8th, 1880, except for a few hours every four to six

weeks, when it is examined and cleaned. This Company has seven of your boilers, or a total of 1,250 horse power, uses them exclusively and they have not required any repair. They are rapid producers of dry steam, containing less than two per cent. of moisture, very saving in fuel, consuming with natural draft about 11 pounds of pea coal per square foot of grate surface per hour, and about two and one-half pounds of pea coal per horse power per hour. They are easily managed, perfectly safe, and I consider them the best boilers extant.

Yours very truly,

HENRY F. ALLEN,  
*Superintendent.*

From THE ST. CLOUD HOTEL.

NEW YORK, January 6th, 1887.

THE HAZELTON BOILER Co., New York.

GENTLEMEN:—I take pleasure in stating that the two boilers of your make located in this Hotel, are giving perfect satisfaction, and I consider them very saving in fuel; quick producers of perfectly dry steam, easily kept clean, and thoroughly safe against accident of any kind. These boilers, as per contract, were to be of 50 horse power each, and a recent evaporation test having been made, in which I represented the purchaser, they developed an aggregate of 150 horse power; with easy firing, that is, carrying our usual fire, and using the ordinary run of coal, as supplied to this house, which is anthracite coal; egg size. I can cheerfully recommend these boilers as the best I have ever seen after many years of experience, with all the various types of boilers.

Yours very respectfully,

GEORGE A. PURDY,  
*Engineer.*

From THE BULL RIVER PHOSPHATE CO., Limited.

SHELDON, BEAUFORT Co., S. C., February 23d, 1887.

THE HAZELTON BOILER Co., New York.

GENTLEMEN:—In reply to your favor of the 11th inst., I have much pleasure in stating that the 100 horse power boiler that you supplied, gives me entire satisfaction. It makes dry steam rapidly, and is extremely easy on the fuel, which is surprising, as this consists entirely of green slabs. I find I can use any sort of water in it, for, during the long drought which prevailed last fall, I ran it for three weeks with salt water entirely, and yet the iron did not scale. Up to the present, the boiler has cost nothing for repairs, so, altogether, I consider it the handiest, most economical, and satisfactory boiler I have ever had anything to do with.

Yours respectfully,

A. G. NICHOLS,  
*Engineer and Manager.*

From THE JERSEY CITY STEEL CO.

JERSEY CITY, N. J., February 26th, 1887.

THE HAZELTON BOILER Co., New York.

GENTLEMEN:—In February, 1885, we placed one of your boilers in our works to utilize the waste heat from our melting furnaces, after the same had passed through a flue boiler over thirty feet in length, using your boiler as a

stack, and found that for several hours during the day your boiler was giving us equal to 100 horse power, and was so satisfactory that six months later we ordered a duplicate for our other melting furnaces. There have been, so far, no repairs, and the boilers are in every way satisfactory. We cheerfully recommend your boilers to any one requiring steam.

J. R. THOMPSON,  
*President.*

From MESSRS. HENRY DISSTON & SONS, IRON AND STEEL CO.

TACONY, PA., February 25th, 1887.

THE HAZELTON BOILER Co., New York.

DEAR SIRS:—In reply to yours asking how we like the working of your boilers, beg leave to say that they are working to our entire satisfaction. The first one we put in has now been in constant use fourteen months, and has not given one particle of trouble.

The tubes have kept perfectly clean; all the dirt we have taken from it has been a very small amount that was deposited in the bottom of the stand pipe.

The water we use is such that we have to keep up the constant use of scale purgative in all our other boilers, excepting those of your make. We expected to have had some trouble with scale deposit in your boilers, as well as in our others, but we have been agreeably disappointed.

I consider your boiler the best boiler made for utilizing the waste heat from heating, puddling, or other furnaces. When we are in the market again for boilers, we shall communicate with you.

Yours truly,

S. T. WILLIAMS,  
*General Manager.*

From LAMBERTVILLE RUBBER CO.

LAMBERTVILLE, N. J., September 7th, 1886.

THE HAZELTON BOILER Co.

GENTLEMEN:—The 100 H. P. Boiler purchased of you last February has been in use for six months, and so far, has given us unqualified satisfaction. It generates steam rapidly, is easily kept clean, and for economy of space and ease of access in case of necessary repairs, is equal to any boiler we have ever seen.

Yours truly,

LAMBERTVILLE RUBBER CO.

From MUNICIPAL GAS CO.

ALBANY, N. Y., July 30th, 1887.

THE HAZELTON BOILER Co., New York.

GENTLEMEN:—We have had your boilers, in constant use since their erection last fall, and they give the best of satisfaction. With them we are enabled to burn, all of our fine coke breeze and cinders, thus showing a large saving in fuel. Since starting boilers, we have not spent one dollar for repairs, and our insurance inspector reports them, as in first-class condition, in every respect.

Yours truly,

W. A. ALLEN,  
*Eng'r and Sup't.*

From MR. WILLIAM MOLLER.

No. 325 EAST SIXTY-FOURTH STREET,  
NEW YORK, June 4th, 1887.

THE HAZELTON BOILER CO.

GENTLEMEN:—Your statements in regard to the good qualities of your boiler, concerning economy of fuel, safety, facility for cleaning, dry steam produced, and all other points that constitute a good boiler, have been more than fulfilled, in the 100 H. P. boiler, which you erected for me, in my factory last winter. It replaced a tubular boiler. It is a great success, especially in burning shavings; producing about double the power with the same quantity of shavings, that the tubular did, and burning them with very little smoke. From my experience with your boiler, I can cheerfully recommend it, and if it were necessary to increase the power of my factory, I would not hesitate to give you the order, for the necessary boilers.

Respectfully yours,

WILLIAM MOLLER.

From THE NEW HOWE MANUFACTURING CO.

BRIDGEPORT, CONN., August 17th, 1887.

THE HAZELTON BOILER CO., New York.

GENTLEMEN:—We have had in constant use, day and night, the 75 horse power boiler you placed in our factory last January. We find it easy to manage, and it produces dry steam very rapidly, and economically. We have made several tests, which have proved very satisfactory; one of which we enclose for publication, if you desire.

Very truly yours,

E. PARMLY,  
*Secretary and Treasurer.*

From THE CITIZENS GAS LIGHT CO.

PORT CHESTER, N. Y., July 30th, 1887.

THE HAZELTON BOILER CO.

DEAR SIRS:—The two 40 H. P. boilers, which we have at our works have given the most perfect satisfaction. They have been in constant use for nearly a year, and as yet show no need of repair. As we are compelled to use exceedingly dirty water, we naturally expected to have trouble from deposit in the tubes, but we have been most agreeably surprised, in that, all sediment deposits in the bottom of the stand pipes, whence it is very easily removed. We do this about once a month, and always find the tubes perfectly clean. In our business, which is the manufacture of water gas; very dry steam, and plenty of it are essential, we consider your boilers unequalled; and they burn less coal, than might be reasonably expected, from the results obtained.

Yours very truly,

A. B. EILBECK,  
*Sup't and Gen'l Manager.*